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List of the Lepidoptera of Five-Mile Beach, N. J.

BY FRANK HAIMBACH, Philadelphia, Pa.

(PART I)

Five-Mile Beach, which includes Anglesea, Wildwood and Holly Beach, is situated at nearly the extreme southern end of New Jersey, being about five miles northward from Cape May. The flora is southern in character, and while there are no very tall trees, flowers grow in wild profusion in the narrow strip of woods, which extends over the whole length of the island, and for the botanist, as well as the entomologist, this place is a veritable paradise.

I believe that Five-Mile Beach has been more thoroughly surveyed entomologically than any other place so near to Philadelphia, and probably no other place in the country enjoys a better patronage by entomologists than this island.

It is the principal hunting ground of nearly all the Philadelphia collectors; for this reason I have thought it desirable to prepare a list of the species to be found there, giving dates of capture and other available data.

I have collected for about 10 years at this place, and besides my own collection I have gone over the collections of Messrs. Philip Laurent and F. Weigand, both of whom have been enthusiastic collectors there. Prof. Smith's List of the Insects of New Jersey has been a great help to me in compiling this list, and Prof. Smith has also very kindly gone over this list, and has added quite a number of records of his own captures.

From the notes which follow, it will be seen that many of the recorded captures were made "at sugar"; now this may appear easy, and in a sense it was so, as all that was to be done was to go about with a brush, and paint about a dozen trees, and begin at once to make the haul. and such a one I have never seen at any other place, as every trunk that had been painted was literally covered with moths, and one could take his choice; but this had to be paid for with blood, for the enemy was so much in evidence everywhere, and in such numbers that it was torture to exist, yet my friend, Mr. Weigand, and myself stuck to it for hours at a time, after which we would go home to have our wounds dressed, and after pinning specimens for several more hours we would retire, but not to sleep that sound sleep which we deserved after our struggles, but to lie awake scratching and moaning, and incidentally to ward off further attacks from the rascally mosquitoes that had followed us to our room. However, the recollection is not an unpleasant one, when we look over our collections, and see some of the pretty specimens which we bottled.

The meadows also have furnished many desirable specimens in our—too short—vacation days.

Part II, or the list of the Micro-lepidoptera, I hope to have ready in a short time; the reason for withholding it now is that I have quite a number of species which up to the present time I have not been able to identify, and no doubt there will be some new species found among them.

I hope this little list will find favor with my brother collec-

tors, and I would like to see some of them come out with a list of the species of their respective chosen orders. Then the general collector would know pretty well what he might expect to find at this garden spot of the Atlantic coast, though it is with sorrow that I note the improvements on the islands which are coming thick and fast, and which to the collector mean ultimate destruction.

PAPILIONOIDEA.

NYMPHALIDÆ.

DANAINAE.

Danais plexippus Linn., May to Oct., larvae on milk weeds.

NYMPHALINAE.

Agraulis vanillae Linn., taken at Cape May and Seven-Mile Beach, a probable inhabitant.
Euptoieta claudia Cram., recorded from Cape May along coast to Hudson Co., June to Oct.
Argynnis idalia Dru., July.
" *cybele* Fabr., July.
" *myrina* Cram., Sept. 13.
" *bellona* Fabr., July.
Phyciodes tharos Dru., July 2 to Aug. 1.
" " var. *marcia* Edw., Sept. 13 to 20.
" " var. *morpheus* Edw., July 26.
Grapta interrogationis Fabr., July 11.
" " var. *fabricii* Edw., Aug. 6.
" " var. *umbrosa* Lint., Aug. 23.
" *comma* Harris, Sept. 11.
" " var. *harrisii* Edw.
" " " *dryas* Edw., May 21, Aug. 6.
Vanessa antiopa Linn., throughout the year.
Pyrameis atalanta Linn., July 11, Aug. 17, Sept.
" *huntera* Fabr., Sept. 20.
" *cardui* Linn., Sept. 20, Aug. 17.
Junonia coenia Hbn., common July to Oct.
Limenitis ursula Fabr., July 15.
" *archippus* Cram., July.

SATYRINAE.

Debis portlandia Fabr., July.
Neonympha canthus Bd. and Lec., June.
" *eurytris* Fabr., June to Sept. Several specimens with large ocelli, like Florida specimens.
Satyrus alope Fabr., var. *maritima* Edw., common July to Sept.

LYCAENIDÆ.

LYCAENINAE.

Thecla halesus Cram., recorded from Cape May, and may occur at Five-Mile Beach.
" *favonius* S. and A., Anglesea, Sept. 1 (2 spmn.).
" *melinus* Hbn., July 4 to 20.
" *calanus* Hbn., July 3.
" *liparops* Bd. and Lec., July 17 to 26.
" *damon* Cram., 7, 28.
" *irus* Godt., April 26 to June.
" *niphon* Hbn., May 7.
Chrysophanus hypophlaeus Bdv., May to Sept.
Lycaena pseudargiolus Bd. and Lec., July 3 to Aug. 27.
" " var. *lucia* Kirby, April 30.
" " var. *marginata* Edw., May.
" *comyntas* Godt., May to Sept.

PAPILIONIDÆ.

PIERINAE.

Pieris protodice Bdv., Sept. and Oct.
" " var. *vernalis* Edw., May.
" *rapae* Linn., March to November.
Anthocharis genutia Fabr., recorded from Seven-Mile Beach, and no doubt occurs at Five-Mile Beach.
Catopsilia eubule Linn., in swarms, in Sept.
Colias philodice Godt., June to Sept.
Terias nicippe Cram., Sept. to Nov.
" *lisa* Bdv., June to Oct.

PAPILIONINAE.

Papilio ajax Linn., one spmn. seen by Mr. H. W. Wenzel at Anglesea.
" *philenor* Linn., July.
" *polyxenes* Fabr., April to Oct.
" *troilus* Linn., April to Sept., the commonest *Pap.* on the island.
" *glaucus* Linn., have no actual records, but no doubt occurs with *turnus*.
" *glaucus* var. *turnus* Linn., May to Sept.

HESPERIDAE.

Ancyloxypha numitor Fabr., May to Sept.
Pamphila zabulon Bd. and Lec., June 19, Aug. 21.
" *campestris* Bdv., July 26, Sept. 20.
" *phylaeus* Dru., Aug. 20.

Pamphila otho S. and A., var. *egeremet* Scud., June 3, Aug. 27.
" *peckius* Kirby, May 30, Aug. 8.
" *cernes* Bd. and Lec., May to Sept.
" *verna* Edw., June 23, Aug. 12.
" *metacomet* Harris, July 27.
" *panoquin* Scudd., June to September, common in salt meadows, and on flowers of button-ball.
" *dion* Edw., Anglesea, July 7.
" *aaroni* Skinner, June 15, Aug. 22 to 27, common in salt meadows, and is easily taken in the morning, in flowers of *Convolvulus*.
" *fusca* G. and R., June 9.
" *viator* Edw., Anglesea, July 25.
Pyrgus tessellata Scudd., Aug. to Oct.
Nisoniades juvenalis Fabr., May to Sept.
Pholisora catullus Fabr., May to Sept.
Eudamus pylades Scudd., May to Aug.
" *bathyllus* S. and A., May to Aug.
" *lycidas* S. and A., June to July.
" *tityrus* Fabr., May to Sept.
" *proteus* Linn., has been taken by Mr. Hornig.

SPHINGOIDEA.

SPHINGIDÆ.

MACROGLOSSINAE.

Hemaris thysbe Fabr., July 26.

CHOEROCAMPINAE.

Amphion nessus Cram., May 30.
Pholus pandorus Hbn., Aug. 5, 6.
Deilephila lineata Fabr., May to July.
Ampelophaga myron Cram., Aug. 2.
" " var. *cnotus* Hbn., Aug. 2.

SPHINGIDAE.

Phlegethontius quinquemaculata Haw., Aug.
" *carolina* Linn., Aug. 6 to 29. Have seen hundreds of this and preceding species on electric light poles at Holly Beach.
Ceratomia undulosa Wlk., June, on bark.

SATURNOIDEA.

SATURNIDAE.

Samia cecropia Linn., June to August, at light.
Callosamia promethea Dru., June to Aug.

Actias luna Linn., Aug., 8.
Telea polyphemus Cram., June to Aug.
Hyperchiria io Fabr., June to Aug.

CERATOCAMPIDAE.

Eacles imperialis Dru., June to Aug., common at light.
" " var. *didyma* DeB., July 15.
Citheronia regalis Fabr., June and July, not uncommon at light, and have found the larvae on oak.
Anisota stigma Fabr., Anglesea, at light.

BOMBYCOIDEA.

SYNTOMIDAE.

Scepsis fulvicollis Hbn., flies by day, on flowers.

LITHOSIIDAE.

Crambidia pallida Pack., Aug., 20, Sept. 3, at light.
Hypoprepia miniata Kirby, May 28, Sept. 11, at light.
" *fucosa* Hbn., Aug. 3 to 12, at light.
Cisthene subjecta Wlk., Anglesea, July 15, Aug. 21, larvae on *lichens*.

ARCTIIDAE.

Eubaphe aurantiaca Hbn. var. *ferruginosa* Wlk., June 14, August 21, in fields.
" *aurantiaca* Hbn. var. *brevicornis* Wlk., Aug. 21.
Uletheisa bella Linn., May 20, July 4 to Aug. 20, in meadows.
Haploa clymene Brown, July 14 to 22, in woods.
Estigmene acraea Dru., May to Sept.
Diacrisia virginica Fabr., June and July.
Isia isabella S. and A., April to June, August.
Phragmatobia fuliginosa Linn., Anglesea, at light.
Apantesis virgo Linn., August 24, at light.
" *arge* Dru., July 14, in fields.
" *nais* Dru., June and Sept.
" *vittata* Fabr., June, at light.
" *radians* Wlk., Aug. 3, at light.
" *phalerata* Harris, Aug. 3, at light.
Ammalo tenera Hbn., Aug. 22, in fields.
Halisidota tessellaris S. and A., July 30, at light.

NOCTUIDAE.

NOCTUINAE.

Acronycta lobeliae Gn., May 30, at light, Aug. 3 to 5, at sugar.
" *interrupta* Gn., Aug. 20, at sugar.
" *furcifera* Gn., Aug. 2 to 20, at sugar.

Acronycta clarescens Gn., Aug. 4 to 27, at sugar.
" *hamamelis* Gn., Aug. 22 to 27, at sugar.
" *ovata* Grt., Aug. 4 to 27, at sugar.
" *inclara* Smith, at Holly Beach, by Mr. Weigand.
" *impleta* Wlk., Aug. 2, at sugar.
" *xyliniformis* Gn., July 25 to Aug. 2, at sugar.
" *oblinita* S. and A., Aug. 3 to 5, at sugar.
Arsilonche albovenosa Goetze, Anglesea, at light.
Microcoelia diphtheroides Gn. var. *obliterata* Grt., by Mr. F. Weigand.
Polygrammate hebraeicum Hbn., by Mr. Weigand.
Chytonix palliatricula Gn., at Anglesea, by Prof. Smith.
Platysenta videns Gn., Aug. 14 to 27, very common, at sugar, Sept. 5.
Anorthodes tarda Gn., Aug. 20, at sugar.
Caradrina miranda Grt., Anglesea, Aug. 14, Sept. 4.
Perigea epopea Cram., Aug. 2 to 27, common, at sugar.
" *vecors* Gn., Anglesea, Sept 16.
" *sutor* Gn., Aug. 20, at sugar,
Oligia festivoides Gn., Anglesea, by Prof. Smith, June.
" *chalcedonia* Hbn., Aug. 12, sugaring.
" *versicolor* Grt., Aug. 20. "
" *grata* Hbn., Aug. 27. "
Hadena dubitans Wlk., Aug. 20 to 27, "
" *burgessi* Morr., Cape May Co., 1 spec., at light, Smith list.
" *devastatrix* Brace, June and July.
" *arctica* Bdv., Aug. 12, at sugar.
" *cariosa* Gn., July 4, by Mr. Weigand.
" *modica* Gn., Aug. 27, at sugar.
" *miseloides* Gn., July 27, Aug. 27, at sugar.
" *turbulenta* Hbn., Aug. 22, at sugar.
Dryobota illocata Wlk., Aug. 22, "
Hyppa xylinoides Gn., Aug. 20, "
Euplexia lucipara Linn., Aug. 20, "
Dypterygia scabriuscula Linn., by Mr. Weigand.
Pyrophila pyramidoides Linn., Aug. 6 to 20, at sugar.
Helotropha reniformis Grt., Aug. 22 to 27, at sugar.
" " var. *atra* Grt., Aug. 27, at sugar.
Prodenia commelinae S. and A., Aug., June 1.
" *eudiopta* Gn., Aug. 27, at sugar; Sept. 5.
" *ornithogalli* Gn., Aug. 14 to 27, at sugar; Sept. 4.
Laphygma frugiperda S. and A., Aug. 20, at light.
" " var. *obscura* Riley, Aug. 15, at light.
Rhynchagrotis anchocelioides Gn., Anglesea, Sept.
" " var. *brunneicollis* Grt., July 1, Aug. 20, at sugar.
Agrotis ypsilon Rott., Aug. 14 to 22, at sugar.
" *geniculata* Morr., Cape May Co., 1 spec., Smith list.

Pyrrhia umbra Hfn., July 27, at sugar.
Scoliopteryx libatrix Linn., Aug. 20 to 27, at sugar.
Orthosia bicolorago Gn., Aug. 2, at sugar, at Holly Beach, Oct., in field.
" *helva* Gt., Aug. 2, at sugar.
Heliothis armiger Hbn., throughout the season.
Rhodophora florida Gn., July 4, Aug. 4, in flower of evening primrose.
Eupanychis spinosae Gn., Anglesea, Sept. 20.
Schinia nundina Dru., Anglesea, Sept. 2.
" *lynx* Gn., Anglesea, Aug. 14 to 16.
" *arcifera* Gn., Holly Beach, Aug. 21 to 27, Sept. 20.
Lygranthoecia marginata Haw., Aug. 27, at light.
Autographa precationis Gn., common in fields.
" *brassicae* Riley, Sept. 5.
" *falcifera* Kirby, May, in fields.
" " var. *simplex* Gn., July 4.
Ogdoconta cinereola Gn., Aug. 6 to 27, at sugar.
Puectes oculatrix Gn., Aug. 4 to 6, at sugar.
Marasmalmus inficita Wlk., Aug. 2 to 6, at sugar; June 16.
" *ventilator* Grt., Aug. 14.
Aletia argillacea Hbn., Aug. 27, Oct. 10.
Eucalyptera bipuncta Morr., Anglesea, J. B. S.
Amolita fessa Grt., June 15, July 21, Aug. 2 to 23, at light.
Doryodes bistriaris Geyer, June to Sept., in salt marsh meadows.
Phiprosopus callitrichoides Grt., Aug. 5 to 14, at sugar.
Rivula propinqualis Gn., July 24.
Erastria synochitis G. and R., June 16.
" *musta* G. and R., August, at light.
" *muscosula* Gn., Aug. 6 to 12, at sugar.
" *apicosa* Harv., Aug. 12 to 20, at sugar.
" *carneola* Gn., Mr. F. Weigand, Sept. 4.
Galgula hepara Gn., Mr. F. Weigand.
" " var. *partita* Gn.
Lithocodia bellicula Hbn., May, Aug., Sept., in meadows; Aug. 12, Sept. 4.
Prothymia rhodarialis Wlk., Anglesea, J. B. S.
Xanthoptera nigrofimbria Gn., F. Weigand, August 31.
" *semiflava* Gn., July 19, flies in black berry bushes.
Chamyris cerintha Tr., July, Sept. 4.
Acontia terminimacula Grt., July 26.
" *biplaga* Gn., Sept. 4.
" *delecta* Walk., Cape May, Smith list.
" *erastriodes* Gn., Aug. 15.
" *candefacta* Hbn., July 12 to 16, August 20 to 27, May 30.
Euherrichia mollissima Gn., Anglesea, July 24; Holly Beach, Aug. 4, F. Weigand.
Spragueia onagrus Gn., Anglesea, May, J. B. S.

Peridroma occulta Linn., Aug. 20 to Sept 5, at sugar.
" *margaritosa* Haw., Aug. 20, at sugar.
" " var. *saucia* Hbn., July 11, Aug. 27, at sugar.
" *incivis* Gn., Aug. 20, at sugar.
Noctua bicarnea Gn., Aug. 22, at sugar.
" *c-nigrum* Linn., Aug. 27, at sugar.
" *plecta* Linn., Aug. 4 to 6, "
" *clandestina* Harris, May to Sept., under bark.
Feltia subgothica Haw., Aug., at light.
" *jaculifera* Gn., Aug. 20, Anglesea, in field.
" *herilis* Grt., August, at light.
" *annexa* Treitsch., Aug. 6 to Sept.
" *malefida* Gn., Anglesea, Sepr.
Porosagrotis vetusta Walk., Anglesea, Sept. 28.
Euxoa detersa Wlk., Oct. 4, on golden rod.
" *messoria* Harris, June to Sept., larvae on sweet potato.
" *tessellata* Harris, August.
Mamestra meditata Grt., Anglesea, June, Aug., Sept.
" *trifolii* Rott., Aug., on cabbage.
" *picta* Harris, Aug. 22, at sugar.
" *adjuncta* Bdv., Aug.
" *goodellii* Grt., July 26.
" *renigera* Steph., July 1 to 6, at sugur.
" *olivacea* Morr., Anglesea, June, Aug., Sept.
Nephelodes minians Gn., Anglesea, Aug.
" " var. *violans* Gn., Aug.
Tricholita signata Wlk., Sept. 4.
Leucania unipuncta Harv, Aug. 20 to 27, at sugar.
" *flabilis* Grt., Aug. 5.
" *rimosa* Grt., July 25, Aug. 4.
" *pseudargyria* Gn., Aug. 4, at sugar.
" *albilinea* Hbn., Aug. 4 to 27, at sugar; June 1.
" *diffusa* Wlk., Aug. 20, "
" *extincta* Gn., Aug. 12, "
" *multilinea* Wlk., Aug. 27, "
" *commoides* Gn., Aug. 4, " and Anglesea, Sept.
" *phragmatidicola* Gn., June 10, at light, Aug. 27, at sugar; Sept. 3 and 4.
Orthodes crenulata Butl., Aug. 4 to 12, at sugar; 25, at light.
Taeniocampa oviduca Gn., Aug. 17 to 20, at sugar; Sept. 3, at light.
" *alia* Gn., April 30.
Cucullia asteroides Gn., July 26, at light.
Ommatostola lintneri Grt., Anglesea, Aug. 31 to Sept. 2.
Hydroecia velata Wlk., Anglesea, July.
" *americana* Speyer, Anglesea, July, J. B. Smith.
Papaipema cataphracta Grt., Anglesea.

HYPENINAE.

Epizeuxis lubricalis Geyer, Aug. 6 to 27, at sugar.
" *americalis* Gn., Sept. 4.
" *rotundalis* Wlk., Aug. 27.
" *aemula* Hbn., Sept. 5.
Zanclognatha lituralis Hbn., Aug. 14, at sugar.
" *theralis* Wlk., July 9.
Hormisa absorptalis Wlk., Aug. 2, at light, Sept. 4.
" *orciferalis* Wlk., Aug. 2 to 13, in trap.
Philometra eumelusalis Wlk., June 19, July 31.
Chytolita morbidialis Gn., July.
" *petrealis* Grt., taken at Burleigh, just across the bridge, J. B. S.
Bleptina caradrinalis Gn., Aug. 6 to 20, at sugar.
" *inferior* Grt., Anglesea, Sept. 12.
Tetanolita floridana Smith, July 26.
" *mynesalis* Wlk., Anglesea, at light, June 10, Aug. 2, Sept. 4.
Renia discoloralis Gn., July.
" *clitosalis* Wlk., Aug. 6, at sugar.
" *factiosalis* Wlk., Aug. 12 to 14, at sugar.
" *flavipunctalis* Geyer, July 2, Aug. 14 to 20, in woods and at sugar.
Heterogramma pyramusalis Wlk., July 29, in woods.
Gaberasa ambigualis Wlk., July 20.
Pulthis angulalis Hbn., July 26.
Bomolocha bijugalis Wlk., Anglesea.
Plathypena scabra Fabr., Sept. 20.

NOTODONTIDAE.

Melalopha apicalis Wlk.
Datana ministra Dru., Aug. 3, at light; 21.
" *drexelii* Hy. Edw., Aug. 2, at light.
" *perspicua* G. and R., Aug. 21.
Nadata gibbosa S. and A., var. *doubledayi* Pack., May 27, at light.
Heterocampa pulverea G. and R., May 27, at light.
Harpyia borealis Bdv., June 20, Aug. 20, at light.

GEOMETRIDAE.

HYDRIOMENINAE.

Eudule mendica Wlk., June and July.
Tephroclystia miserulata Grt., June 19, in fields.
Eustroma diversilineata Hbn., July 9 to 17, Sept. 9, at light.
Percnoptilota fluviata Hbn., July 23 to Aug. 6, at sugar; July 19 to Sept. 3.
Mesoleuca intermediata Gn., Aug. 6, in woods.
Hydriomena latirupta Wlk., July 14 to 29, Aug. 27, at sugar.

MONOCTENIINAE.

Haematopis grataria Fabr., Aug. 1, in fields; Sept. 4.

Phalaenostola larentiodes Grt., June 15, July 12 to 26, Sept. 4.
Pangrapta decoralis Hbn., July 26 to 29.
Hymia perditalis Wlk., Anglesea, July 21, Aug. 1 to 5.
Homopyralis contracta Wlk., Aug. 6, at sugar, Sept. 3.
" *discalis* Grt., Anglesea, Sept. 4.
" *tantillus* Grt., Anglesea, J. B. S., Sept. 3.
Hypsoropha hormos Hbn., Aug. 1 to 20, at sugar.

CATOCALINAE.

Drasteria erechtea Cram., Aug. 9, at sugar.
" *crassiuscula* Haw., in fields.
" " var. *ochrea* Grt., July 31.
Euclidia cuspidea Hbn., May 11.
Melipotis jucunda Hbn., Aug. 1 to 14, at sugar.
Catocala nubilis Hbn., July 1.
" *elonympha* Hbn., Aug. 6 to 21, at sugar.
" *gracilis* Edw., Anglesea, Aug.
" *minuta* Edw., Aug. 6, at sugar.
" *grynea* Cram., Aug., at sugar.
" *micronympha* Gn., Anglesea.
" *ultronia* Hbn., Aug. 6 to 27, at sugar.
" " var. *mopsa* Hy. Edw., as above.
" " var. *adriana* Hy. Edw., as above.
" *ilia* Cram., Aug. 6, at sugar.
" " var. *uxor* Gn., Aug. 6, at sugar.
" " var. *osculata* Hulst, July 30, at sugar.
" *unijuga* Wlk., Anglesea.
" *cara* Gn., Aug. 4 to 27, at sugar.
" *amatrix* Hbn., Aug. 18 to 27, at sugar.
" " var. *nurus* Wlk., same as above.
" *badia* G. and R., Anglesea.
" *muliercula* Gn., July 25 to Aug. 22, at sugar.
" *neogama* S. and A., Aug., at sugar.
" " var. *snowiana* Grt., July 22, at sugar.
" *piatrix* Grt., Aug.
" *judith* Streck., July 22.
" *angusi* Grt., Aug. 22, at sugar.
Parallelia bistriaris Hbn., May 27, in woods, and Aug. 6, sugaring.
Remigia repanda Fabr., Aug. 3, at sugar.
Celiptera frustulum Gn., June 16, in woods, and Aug. 6 to 12, at sugar.
Antiblemma inexacta Wlk., June 17, Aug. 3, at sugar.
Trama detrahens Wlk., July 26.
Pheocyma lunifera Hbn., Aug. 5, at sugar.
Zale horrida Hbn., May 27, in woods, Aug. 21 to 27, at sugar.
Homoptera lunata Dru., July 4, Aug. 12 at 27, at sugar.
" " var. *edusa* Dru., Aug. 3 to 27, at sugar.

STERRHINAE.

Deptalia insularia Gn., July, in woods.
Cosymbia culicaria Gn., Aug. 6 to 27, in woods.
" *myrtaria* Gn., Aug. 27, in woods.
" *albocostaliata* Pack., July 2 to 30, in woods.
" *pannaria* Gn., Aug. 27, in woods.
Synelys alabastraria Hbn., July, "
" *enucleata* Gn., July, "
Cinglis purata Gn., July 27 to Aug. 6, in fields.
Eois demissaria Hbn., Aug. 6, Sept. 9, "
" *ossularia* Hbn., July 9 to 16, "
" *inductata* Gn., Anglesea.
" *productata* Pack., Aug. 1 to 20, in fields.

GEOMETRINAE.

Chlorochlamys chloroleucaris Gn., July 3 to 26, in woods.
Synchlora rubrifrontaria Pack., June 14, in woods.
" *aerata* Fabr., July 9, Aug. 2, in woods; 20.
" *denticulata* Wlk., Aug. 9.
Anaplodes remotaria Wlk. July 25.

ENNOMINAE.

Physostegania pustularia Gn., July, in woods.
Sciagraphia granitata Gn., May 13, Aug. 27, in woods.
" *mellistrigata* Grt., Anglesea.
" *continuata* Pack., Anglesea, June, Sept. 4.
Melanolophia canadaria Gn., July, in woods.
Ectropis crepuscularia Schiff., April 30, in woods.
Cingilia catenaria Dru., Sept. 20, at light.
Xanthotype crocataria Fabr., July 26 to Aug. 8, in fields; June.
" " var. *caelaria* Hulst, June 16, in fields.
Gonodontis hypochraria H.-S., Aug. 6, in woods.
" *duaria* Gn., June 10, in woods.
Euchlaena serrata Dru., July 4, in woods.
" *obtusaria* Wlk., June 18, Aug. 20 to 27, in woods.
" *johnsonaria* Fitch, April 20, in woods.
" *marginata* Minot, Anglesea.
Azelina ancetaria Hbn., Aug. 12 to 20, at sugar.
" " var. *peplaria* Hbn., at sugar.
Syssaura infensata Gn., June, Aug. 6, at sugar.
" " var. *biclaria* Wlk., Aug. 11, at sugar.
Caberodes confusaria Hbn., July 10 to 27, in woods.
Sabulodes transversata Dru., July, in woods, at sugar and light.
" " var. *goniata* Gn., same as above.
" " var. *transposita* Wlk., same as above.
" " *incurvata* Gn., same as above.

(To be continued.)

A new Walking-Stick (Phasmidae) from British Honduras.

By James A. G. Rehn.

Sermyle phalangiphora* n. sp.

Type:— ♂ ; Belize, British Honduras. (J. D. Johnson.) [Acad. Nat. Sci. Phila.]

The genus *Pseudosermyle* has been separated from the older *Sermyle* chiefly on the character of the male cerci, *Sermyle* having them simple and *Pseudosermyle* having them with several fingers. Although the cerci are not simple in this new species, the presence of blunt tubercles on the head instead of linear rugosities and the form of the appendage found on the genital opercule induces me to place it in *Sermyle*, especially in view of the fact that a structure analogous to the one here noticed is found in a less pronounced form in the male of *Sermyle physconia*.

The structure of the subgenital opercule and the bifurcate cerci will at once separate this species from any of the forms of *Sermyle* of which the male is known.

Size medium; body bacilliform; surface smooth. Head slightly longer than the pronotum, subequal in width; eyes globose, very prominent; area between the eyes provided with a pair of well spaced low blunt tubercles, a narrow impressed median line extending caudad of a line between the eyes; antennæ about as long as the body, proximal joint nearly half the length of the head, depressed, second joint about half the length of the proximal one. Pronotum distinctly but not greatly longer than broad, a slightly arcuate transverse impressed line is present; mesonotum about four and a half times the length of the pronotum; metanotum, including median segment, half again as long as the mesonotum, the median segment subquadrate and about a fourth the length of the remainder of the metanotum. Abdomen slightly shorter than the head and thorax, all the segments to and including the sixth longitudinal, the first to fifth regularly increasing in length, the sixth about as long as the second, seventh subquadrate, eighth subquadrate, but slightly shorter and narrower than the seventh, ninth slightly longer than the seventh, regularly expanding to about the width of the same segment, the border marginate and with lateral angles rounded and a slight median

* Φαλαγξ, a finger joint; φορος, that bears.

emargination present; cerci subtrigonal in section at the base, forked at about two-thirds the length, the dorsal arm directed somewhat dorsad and shorter than the other branch which is produced horizontally, the whole cercus having a strong mesad curve and in the type specimen the right one is smaller than the left, the forks being more rudimentary than in the left, which is, apparently, normal;* subgenital opercule short, not reaching the caudal margin of the eighth abdominal segment, moderately inflated, from the ventro-caudal portion of the opercule is developed a finger-like process as long as the ninth dorsal abdominal segment, the apex slightly broader than the shaft, slightly curved dorsad and broadly sulcate on the same face. Cephalic femora very slightly longer than the pronotum and mesonotum together, proximal flexure distinct; cephalic tibiæ exceeding the femora by about the length of the pronotum. Median femora equal to the mesonotum in length; median tibiæ considerably longer than the femora; median metatarsi about as long as the remaining tarsal joints. Caudal femora equal to the five proximal abdominal segments in length; caudal tibiæ slightly longer than the six proximal abdominal segments; metatarsi about as long as the remaining tarsal joints.

General color russet, the thorax lined laterad with French green; head with two longitudinal bars on each side, one caudad of the eye, dorsum of the head suffused with olive-green, antennæ greenish, eyes vandyke brown; apex of the abdomen suffused dorsad with bluish black; limbs faintly and irregularly annulate with raw umber and cinnamon.

MEASUREMENTS.

Length of body	61.	mm.
Length of head	3.8	"
Length of pronotum	3.	"
Length of mesonotum	15.	"
Length of metanotum (including median segment)	11.	"
Length of cephalic femur	19.	"
Length of median femur	15.5	"
Length of caudal femur	21.	"

The type is the only specimen of this interesting species seen by the author.

*Whether this condition of the right cercus is normal for the species or not the author cannot say. It may be that the left is normally larger than the right or the alternative is that the right one in the type specimen is stunted. The left cercus is so well proportioned that the possibility of its being an excessive development can hardly be entertained.

An Entomological Journey in Mexico, with Special reference to Odonata.

By Philip P. Calvert.

As the manuscript on the Odonata for the *Biologia Centrali-Americana* drew near completion, in July, 1906, it seemed desirable to see some of the insects in their native haunts. Mrs. Calvert and I therefore undertook the journey here described with these two objects in view: to obtain a general idea of Mexico and to make some collections of Odonata, more especially in the northern part of the plateau, that being an odonatologically unknown region. Owing to the limited time at our command, the first of the these objects prevented our remaining long in one place so that our collections must be very incomplete, even for that time of year, while our second object took us to some localities at which we otherwise would not have stopped.

The present article will give our itinerary, for future reference, and some notes and suggestions which may be useful to other entomologists visiting the same country. It should be observed that our tour was made in the rainy season and that by common report the rains were heavier than usual. Partly for this cause, the trains on which we traveled were frequently delayed, the total amount of time thus lost beteween El Paso and Mexico City being 54 hours. Most of this loss occurred in such situations and at such times (after nightfall) as to prevent utilization. We shall not soon forget waiting under the open sky near the station at Aguascalientes from midnight to 4.30 A. M. for a train that was momentarily "expected," through trains here, as in many other places, being one in every twenty-four hours. After Mexico City we had few delays until on the Southern Pacific in Texas. We found the "Excursion into Mexico" of the 1904 edition of Baedeker's "United States" very useful.

The data on the Odonata which we obtained have been incorporated in a Supplement in the *Biologia* volume. Other insects, incidentally gathered, have been placed in the Academy of Natural Sciences of Philadelphia and in the University of Pennsylvania.

ITINERARY.

July 25-27, 1906. At Colorado Springs.

July 29-Aug. 3. At Grand Canyon of the Colorado River, Arizona.

Aug. 4, 5. El Paso, Texas.

Aug. 6. El Paso, or rather Ciudad Juarez on the opposite bank of the Rio Grande, to Guzman, Chihuahua, 78 miles in four-and-a-half hours by the Ferro Carril Rio Grande, Sierra Madre y Pacifico. Guzman consists of a railroad station and Chinese-kept hotel combined (accommodations poor) and about a dozen adobe houses close to the Lago, or Laguna, de Guzman. The muddy lake is permanent although its area shrinks in the dry season. It has no outlet. Its banks, near the "town" at least, are chiefly of porous andesite lava in whose cavities were great numbers of the Amphipod, *Hyalella knickerbockeri* var. *inermis.** A small stream from a spring or well enters the lake near the station; along this stream were nine species of Odonata, including *Plathemis subornata.* Surrounding country largely desert, but there is some grazing land. Long-eared jack rabbits, horned toads, the large Diplopod *Spirobolus,* 6-7 inches long, and *Pepsis* conspicuous members of the fauna.

Aug. 7. Returned to El Paso in the afternoon. The south-bound train to Casas Grandes, the termination of the line, runs on Mondays, Wednesdays and Fridays, the north-bound on Tuesdays, Thursdays and Saturdays.

Aug. 9. El Paso to Nogales, Arizona.

Aug. 10. Nogales to Hermosillo by the Sonora Railway, returning Aug 11. Hermosillo very hot (96° F. at 5 P. M., 91° F. at 3 A. M.) and depressing Rio Sonora almost entirely dried up. Very few insects visible, only one species of dragon-fly found—the wide-spread *Orthemis ferruginea,* and that in the irrigated plaza in front of the principal church. Good hotel (Arcadia, kept by Americans), electric lights and mule trams on the principal streets, mounted police, etc. Were I to repeat

*For the identification thanks are due to Prof. S. J. Holmes, of the University of Wisconsin.

this part of our excursion, I should try Magdalena or Santa Ana, between Nogales and Hermosillo. Information about Sonora, train connections to Hermosillo, etc., was almost unobtainable at El Paso, even at the Southern Pacific ticket agency.

Aug. 12. At the Mexican town of Nogales (Hotel Modern, fair, French). River dried up. A very small cow pond at the southern end of the town furnished six species of Odonata. A fair number of other insects gathered in grassy fields, and under electric light before sunrise of next day.

Aug. 13. Returned to El Paso.

Aug. 15. El Paso to Chihuahua City by Mexican Central.

Aug. 16-18. Chihuahua City (Casa Robinson, American kept; local report would make Hotel Palacio better). Rain interfered much with collecting, dragonflies scarce (2 spp.). Many wild flowers in blossom, butterflies and beetles abundant west of city, beyond the Santuario (tram-car from chief plaza), which seemed to be the best collecting ground near at hand. Great individual variation in colors of the Scarabaeid, *Cotinis mutabilis,* in same spot, both here and at Santa Rosalia.

Aug. 19, 20. Santa Rosalia. The warm sulphur springs, or baños (Gran Hotel de la Cueva, fair, chiefly patronized by Americans) three miles above the town, on the Rio Conchos, reached by stage, afforded one of the best collecting grounds for dragonflies (12 spp.; northern limit of *Erythrodiplax connata; Libellula flavida* Hagen = *L. comanche* nobis, see Ent News, May, 1907, page 201, new to Mexico) of our trip. Much cotton is raised in the vicinity.

Aug. 21. Torreon (excellent new hotel Salvador) as a base for

Aug. 22. San Pedro in Coahuila. At the railroad station (Monterey division of Mexican Central) are several ponds wherein Odonata breed; imagos of 10 species taken. Between Torreon and San Pedro, a great cotton-raising district.

Aug. 23. En route for Zacatecas.

Aug. 24, 25. Zacatecas, a quaint and picturesque town in the midst of barren, silver-producing mountains, with almost no insects.

Aug. 26, 27. Aguascalientes City. (Hotel Washington, good). Ponds at the public baths near the railroad and also a little farther westward, but on the eastern edge of the town, yielded most of our Odonata (7 spp.)

Aug. 28. Queretaro.

Aug. 29.-Sept. 1. On or near Lake Chapala, chiefly at Ocotlan (Hotel Central, small, unpretending, Spanish, good), also at Chapala (Hotel Arzapalo, excellent). The stage-route from Atequiza to Chapala was out of service, the road being impassable from mud. A steamboat runs every other day, except Sunday, from Ocotlan to Chapala, returning the next day, but the schedule is unreliable. The lake is largely encroached upon by the water-hyacinth (*Eichhornia*). Twelve species of Odonata at these two localities; *Aeshna luteipennis* and *Miathyria marcella* abundant, the former especially so in the streets of the town of Chapala on Aug. 30, between 5 P. M. and sunset, chasing gnats.

Sept. 1-4. In Guadalajara (Hotel Garcia, good) and immediate vicinity. No attention paid to insects as the locality has been worked over by Messrs. Schumann, McClendon and Tower.

Sept. 4. En route Guadalajara to Mexico City. A delay of four hours at Yurecuaro enabled us to gather a few insects (9 spp. Odonata) along the ditches near the station before heavy rain fell.

Sept. 5-7. Mexico City and vicinity. No collecting attempted as others have done much here.

Sept. 8. To Orizaba (Hotel France, excellent, French). No collecting done.

Sept. 9. Back to Irolo and thence to

Sept. 10-13. Jalapa (Gran Hotel, excellent, Spanish).

Grand views of snow-capped Orizaba and of nearer Cofre de Perote in the early mornings. *Hetaerina tolteca*, previously known from a unique type, found associated with *H. cruentata* along forest stream. First acquaintance with living Heliconids, *Callicore, Morpho,* etc., the number and variety of beautiful Lepidoptera at times fairly bewildering. *Chrysina macropus,* that fine green Scarabæid with violet legs, found under electric

lights in the Plaza and also seen flying in bright sunlight. Sept. 13. Mostly at Xico in the coffee district, reached by rail, and at the fine water-fall at Texolo. Near this last a swarm of several hundred whitish and yellow butterflies, observed to alight repeatedly on the same damp spot, of about one square foot in area, for at least two hours, proved to be composed of four species of *Terias* (*fabiola, tenella, proterpia, mexicana*) and a *Catopsilia*.

Sept. 14-18. Mexico City and vicinity.

Sept. 17. Popocatepetl Park or Cedral (good but expensive English hotel), a short distance beyond Amecameca. Insects few; Odonata very rare, none taken. Fine views of Popocatepetl and Istaccihuatl on the way down, but peaks cloud-covered for hours in middle of day.

Sept. 18-20. Toluca (Hotel Andueza; there are several others), very clean city, beautiful scenery. Nevada de Toluca cloud-covered entire time of our stay. Walked to villages just north of city on Sept. 19, where a few (4) species of Odonata were fairly abundant around pools in the midst of fields of maguey and maize. Butterflies scarce, many humming-birds and lizards. The drainage of Toluca is conveyed by an open ditch to a field, several miles from the city, for subsidence and evaporation. Swifts abundant over this standing water, the only dragonfly here being *Ischnura denticollis* in grass along the water's edge.

Sept. 20, 21. En route to Saltillo.

Sept. 22. Collected in the morning at the Baños de San Lazaro y la Asuncion, on north edge of Saltillo, and in the afternoon near river, opposite the town, by pools along the railroad near the Panteon. The desert near at hand. Nine species of Odonata in all, a single *Enallagma semicirculare* beaten out of the grass at the latter locality. The dining room of the American-built Hotel Coahuila at which we stopped swarmed with *Blattella*, a few of which also invaded our sleeping room on the third floor.

Sept. 23. Left Mexico at Nuevo Laredo en route to Galveston, thence by steamship to New York.

(3.28 FEET = 1 METER, .621 MILES = 1 KILOMETER.)

CALVERT.—ROUTE OF MEXICAN JOURNEY. THE NUMBERS AT EACH LOCALITY GIVE THE APPROXIMATE ELEVATION IN FEET.

In all 100 records for Odonata were obtained; 85 of these are new, *i. e.* all those from all localities at which any collecting was done excepting Queretaro, Jalapa and Xico. The 100 records represent 43 species, 31 species being taken or identified from the localities visited north of the twenty-first parallel of north latitude. This number does not indicate a very rich Odonate fauna for the northern Mexican plateau, although, no doubt, many additions are yet to be made to the list.

The Male of Comperiella.

By L. O. Howard.

In *Entomological News* for April, 1906, pp. 121-122, under the heading "An Interesting New Genus and Species of Encyrtidæ," I described *Comperiella* gen. nov. *bifasciata* sp. nov. from one female specimen bred from *Aspidiotus* (*Aonidiella*) *aurantii* Maskell, collected in China by Mr. George Compere. Since that time, Mr. E. K. Carnes has bred the male in the insectary of the California State Horticultural Commission at Sacramento, California, and has sent me a single slide mount. It may be described briefly as follows:

COMPERIELLA Howard.

Male—Antennæ with short subcylindrical pedicel; funicle joint 1 twice as long as pedicel and about equal to 2; 3 and 4 longer and subequal in length; 5 of nearly the same length, and 6 somewhat shorter; club ovate, pointed and shorter than pedicel joints 5 and 6 together; entire flagellum, with whorls of long curved hairs. Abdomen shorter than thorax and flat above. Eyes well separated, naked.

Comperiella bifasciata Howard.

Male.—Length 1.1 m.; expanse 2.4 mm.; greatest width of fore wing .43 mm.—General color dark brown, nearly black; mesonotum with slight greenish metallic reflections; antennæ light brown, pedicel darker; tips of front and middle tibiæ lighter; tarsi yellowish except terminal joint. Wings perfectly hyaline, veins dark brown.

Described from 1 specimen. Habitat, China. Type in U. S. National Museum.

CALVERT.—ROUTE OF MEXICAN JOURNEY. THE NUMBERS AT EACH LOCALITY GIVE THE APPROXIMATE ELEVATION IN FEET. (3.28 FEET = 1 METER, .621 MILES = 1 KILOMETER.)

Notes on some little known North American Syrphidae.

By PAUL R. JONES, Lincoln, Nebraska.

1. **Chrysogaster nigrovittata** Loew.

Two females, one from Craig's Mountain, and one from Moscow, Idaho. The antennæ are a trifle longer than I would infer from Loew's description, the epistoma rather prominent, upper part of the face with delicate transverse striæ, front rugose on the sides with a middle longitudinal space. Thorax finely punctate, deep green, with four coppery longitudinal stripes. Legs wholly black. Formerly recorded from Washington, California and Colorado.

2. **Chrysogaster stigmata** Williston.

Three specimens; two from Craig's Mountain, and one from Moscow, Idaho.

3. **Pipiza albipilosa** Williston.

A female from Moscow, Idaho, and a male from Vollmer, Idaho, May 30, 1896. Compared with a female from Pennsylvania, the pile on the female is longer and a trifle lighter than in the eastern specimen; third joint of the antennæ wider, answering to Williston's description minutely; abdomen is wider, clothed with shorter pile, than in the one from Pennsylvania; also, with the posterior part of the second and third segments with dark-appearing cross bands of black pile. Legs black, tibiæ and tarsi not so light as in the eastern specimen, being more brownish. Wings not so distinctly brownish, and the outer anterior angle of the posterior cell a trifle more obtuse.

The male not so distinctly white pilose as the female. Front and vertex appearing black pilose, in some lights, and white in others; face with similarly colored pile. Third joint of the antennæ more like that in the eastern female and lighter than that of the western specimen. Thorax, with pile similar to that of females; abdomen similar to that of western female and with similarly colored pile. Legs black, similar to those of western female. Wings more brownish, similar to those of specimen from Pennsylvania, outer anterior angle of the first posterior

cell also similar, being more acute than that of western female. Length 8 mm. In general appearance, the western specimens are larger and more thickly set. Formerly recorded from a female from Pennsylvania.

4. **Pipiza pistica** Williston.

A female from Pike's Peak, Col., July 20, 1906 (Prof. Bruner), which agrees in every way with Williston's description, except all four joints of the anterior and middle tarsi are blackish, the first one not so much so as the rest, the metatarsi are yellow. The specimen is shorter and more robust than I would infer from the description.

5. **Pipiza calcarata** Loew.

♂.—Bronze-black, white pilose, eyes greenish, pile white, in some reflections black, front black pilose, whitish in some lights, face white pilose appearing darker when viewed from below. Antennæ black, third joint reddish, broadly oblong, pile of thorax light colored. Pile of the abdomen very short, longer on the lateral border, white. Legs black, front tibiæ except a broad blackish ring, middle tibiæ less so, first joint of four anterior tarsi luteous, last three joints blackish. Hind coxæ with a long slender process, compressed toward the end. Wings except the extreme base cinereous, small cross vein from the base of the discal cell and last section of the fourth vein from the margin of the wing less remote than in *P. femoralis,* vein at outer end of discal cell straight, not bent as in *P. femoralis,* which is only slightly so.

Formerly recorded from New York and New Jersey.

6. **Pipiza pulchella** Williston.

One female from Lawrence, Kansas, and a male from Brookings, South Dakota, which agree with Williston's description, except the last three joints of the four anterior tarsi are black, the last of the hind tarsi, black; second, brownish. The face of the male is longer and more whitish pilose than the female. Formerly recorded from females from Connecticut, Massachusets, Florida, and New Jersey.

7. **Chilosia aldrichi** Hunter.

Two females from Pike's Peak, Col., July 22, 1906 (Prof. Bruner), which agree with Hunter's description. The third antennal joint is nearly black. Formerly recorded from Idaho.

8 **Chilosia cyanea** Hunter.

One female from Colfax, Washington, July 10, 1895, which agrees in every way with Hunter's description, except the wings are cinereous with the basal half tinged with brown. Formerly recorded from Moscow, Idaho.

9. **Chilosia occidentalis** Williston.

A male from Custer, South Dakota, which coincides with Williston's description. The wings are cinereous, with a streak of dark brown running obliquely through the center. Length 10 mm. Former records from Alaska and California.

10. **Chilosia laevis** Bigot.

♂.—Black, eyes bare, front and vertex long, black, pilose, face shining black, bare, deeply concave below the antennæ to tubercle which projects farther than the antennæ, then deeply concave to epistoma, lateral sutures extend to base of the antennæ. Antennæ very small and nearly black, arista more than twice as long as the antennæ, very finely pubescent. Thorax and scutellum shining black with a greenish tint, clothed with long black pile which shows lighter in some lights. Borders of the scutellum with a row of long black, bristly hairs. Abdomen ovate, first, fourth and fifth segments sub-shining, second and third, except anterior angles, opaque, clothed with a fine black pile and longer luteous pile which is quite long on the lateral margin of the segments. Halteres testaceous, squamæ blackish, black ciliate. Legs black, fringed with luteous pile, base of tibiæ somewhat luteous. Wings cinereous, hyaline, upper and basal part tinged with light brown. Length, 8 mm.

One male from Pike's Peak, Col., July 20, 1906 (Prof. Bruner). Formerly recorded from a female from Washington, by Bigot. Bigot's description is rather short, but I believe this to be correctly determined.

11. **Melanostoma coerulescens** Williston.

One male from Moscow, Idaho. The tubercule is smaller, the lateral spots on the second segment of the abdomen are very faint and whitish, those on the third segment are very distinct and yellow, those on the fourth are nearly as faint as the spots on the second, and are also whitish. The remaining characters coincide with Williston's description. Formerly recorded from Colorado and Quebec.

12. **Sphegina infuscata** Loew.

One female from Moscow, Idaho. The pile on the dorsum of the thorax is very delicate and nearly obscure. Formerly recorded from Alaska, Oregon, Colorado and New Hampshire.

13. **Sphegina lobata** Loew.

A female from Moscow, Idaho. Front and face black, covered with fine white pubescence. Antennæ brownish. The abdomen has a bluish cast, the large testaceous spots on the third and fourth segments are wanting, the fifth segment does not have the appearance of sordid white. Legs whitish yellow, hind legs black; base of femora, band in middle of tibiæ yellowish; tarsi brownish yellow. Formerly recorded from Middle States, New Hampshire, Oregon, New Jersey, New York.

14. **Hammerschmidtia ferruginea** Fall.

Five males and one female from Pike's Peak, Col., July 20, 1906 (Prof. Bruner). The face is lighter than I would infer from the description. Formerly recorded from Washington and the Saskatchewan River.

15. **Volucella evecta** Walker.

Var. *facialis* Williston. Face reddish yellow in the middle and thickly clothed with yellow pile. The dorsum of the thorax with black pile. Pleura with long yellow pile. Formerly recorded from New England, Middle States, British Possessions, California, Alaska. A male from Pike's Peak, Col., July 20, 1906 (Prof. Bruner).

16. **Eristalis saxorum** Wiedeman.

Five females and four males from Pike's Peak, Col., July 22, 1906 (Prof. Bruner). The yellow spots on the second segment of the males are very distinct, nearly all of the opaque markings of the abdomen of the females are wanting. Formerly recorded from Georgia, Pennsylvania, Massachusetts, Connecticut, New Jersey.

17. **Xylota vecors** Osten Sacken.

Agrees with Osten Sacken's description, except the legs and coxæ are more of a fulvous, the hind tibiæ and apical fifth of hind femora black. Formerly recorded from White Mts., New Hampshire, and Montreal.

Cecidomyia acarivora n. sp.

By E. P. Felt, Albany, N. Y.

The above named species was received through the courtesy of Dr. L. O. Howard, of the Bureau of Entomology, U. S. Department of Agriculture, from Frederick Maskew, of Southern California, who found the larvæ feeding upon *Tetranychus mytilaspidis* and *T. sexmaculatus*, infesting lemon leaves and fruit at Chula Vista, California. At the request of Dr. Howard, we have decided to describe this species at once.

Male.—Length, 1.5 mm.—Antennæ longer than the body, probably pale yellowish, rather thickly haired; 14 segments, the first broadly obconic, the second flattened basally, subglobose, the third and fourth slightly fused, they and the following binodose, the enlargement subequal; three well-developed circumfili. Palpi apparently composed of five segments, face probably pale yellowish. Mesonotum apparently light brown. Scutellum and postscutellum concolorous. Abdomen a yellowish red. Wings hyaline, costa dark brown, subcosta uniting with the margin near the basal fourth, the third vein just beyond the apex, the fifth at the distal third, its branch at the basal third. Halteres probably pale yellowish. Legs presumably nearly uniform pale yellowish, anterior claws bidentate, the others simple. Genitalia; basal clasp segment long, slender, terminal clasp segment rather short, swollen at the base; dorsal plate short, broad, deeply and narrowly incised, the lobes broadly rounded distally and with several coarse setæ apically, ventral plate long, broad, somewhat excavated at the basal third, swollen near the distal third, roundly truncate distally and with several conspicuous setæ at the slightly notched lateral posterior angles.

Female.—Length, 1.75 mm.—antennæ extending to the fifth abdominal segment, apparently light yellowish, sparsely haired; 14 segments, the third and following with a smooth stem about ½ the length of the subcylindric basal enlargement. Palpi consisting of four segments, ovipositor short, the lobes subtriangular, tapering to a narrowly rounded apex and thickly clothed with coarse setæ; colorational and other characters about as in the opposite sex.

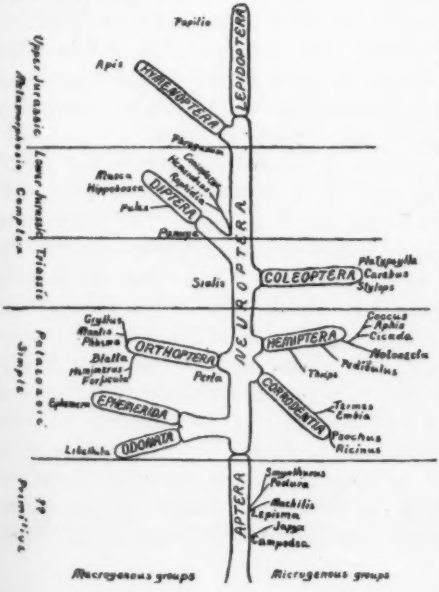
Larva.—Length, 1.75 mm; rather stout, tapering anteriorly to a rather conspicuous head and broadly rounded posteriorly. Head large, broadly rounded, with a pair of long, slender, cephalic horns at the lateral margins; mouth-parts rather inconspicuous.

Types—Cecid 847 deposited in the U. S. National Museum and New York State Museum.

The Classification of Insects.

By C. W. Woodworth.

The numbers of orders of insects recognized by recent authors has varied from seven to thirty-four. The most diverse views are also held as to the relationships between these groups. So great are the differences that one would be led to believe, after a superficial review of the situation, that little or no progress has been made towards a generally acceptable classification. A more careful study will show, however, that the differences of opinion, though often radical, still lie in rather narrow limits. There are, for instance, only thirty-nine groups that have ever been raised to the rank of orders, or which have ever shifted their position from one order to another. The author's view of the relation of these groups to each other and their grouping into orders is shown in the following diagram, in which these thirty-nine groups are designated by names of typical genera.



The Aptera are generally conceded to occupy the place given to them in this diagram, and are always placed together, though some authors make six orders; some three, uniting them in pairs; others two, uniting the four lower groups; and still others only one, or a few uniting the whole series with the Neuroptera.

Campodea seems a natural transition from *Scolopen-*

drella, and *Lepisma* is generally looked upon as very near to the ancestor of all the higher insects.

Winged insects are usually conceded to have been derived from a single source, but recent authors have arranged themselves into two camps, according as they regard the original insect to have been *Blatta*-like or *Perla*-like. The writer strongly inclines to the latter view. If the *Blatta*-like ancestor was accepted, however, the only change necessary in the diagram would be the location of *Blatta* in the place of *Perla* and the removal of the latter up the main stem towards *Sialis*.

The Odonata and Ephemerida are usually recognized as distinct orders by recent authors, though some would still unite them with the Neuroptera nearer to the *Perla*. The placing of these two groups apart from all other winged insects is an idea originating with myself. The basis for this division is the fact that these ancient groups alone among insects existing since the palæozoic era have the form of articulation of the wing which permits only a motion in one direction; all other groups possessing structures permitting the wing to lie parallel with the axis of the body when at rest. This differentiation of thorax and wing structure must have occurred in very ancient time; should the importance of this specialization not be admitted, then these groups would simply be moved closer to *Perla*.

The Orthoptera are almost uniformly combined into one order as is here done with the exception of those who would make a separate group for the Forficulids. The latter group seems to have clearly been derived from a *Blattid* ancestor. The idea that it might have come directly from such an insect as *Japyx* is not, I think, held by any one at the present time. There seems to be nearly as much ground for making six orders as done by Handlirsch as for separating off this one. According to the conception here presented there are two groups of large insects which left the water in the palæozoic era, one *Phasma*-like which lived on the foliage of plants and gave rise to the Mantids and the saltatorial forms, the other feeding on decaying vegetation on the ground, the ancient cockroaches and the two derived groups represented by *Hemimerus* and *Forfi-*

cula. Both of these groups remained near enough like the primitive ancestors to justify their retention in a single order or a closely allied group or orders as one may wish.

The Corrodentia, though sometimes united with the Neuroptera, are commonly separated into three or four orders as here indicated, though their close relationship is coming to be very generally accepted. The birdlice are most commonly segregated as an independent order. After the general rejection of the idea of the relationship of this group with the Pediculids it has gradually been coming to be recognized as a recent specialization of a nest-infesting wingless *Psocid.*

The relationships of the groups of sucking insects included here in the order Hemiptera will, I think, be generally accepted. The chief difference of opinion will be as to whether the groups represented by *Thrips* and *Pediculus* should not be made independent orders. Only a few would still further increase the list of orders as indicated by the groups shown at the end of this branch.

All the groups on the right hand side in this diagram are supposed to be microgenous, that is to have originated as small insects, the Corrodentia entering the same habitat as the ancient Blattids and the primitive Hemiptera taking the same locations as the *Phasma*-like forms, but leaving no early fossils because of their small size and delicate structures until after the groups became largely differentiated. The social white ants and the few highly developed palæozoic bugs with the sucking mouthparts already perfected are all the ancient remains of these groups, and in both cases they belong to groups which would not be counted most ancient on anatomical grounds. The venation in both the Corrodentia and the Hemiptera show a profound reorganization, best explained by their simplification due to small size and their reorganization when a successful specialization of the body made possible a regaining of considerable size, a specialization best accomplished in the Hemiptera.

Leaving the groups with simple metamorphoses which were differentiated in the paleozoic we find in the triassic, a *Sialis-*

like form, evidently with complex metamorphoses whose nearest allies in the former period were undoubtedly the *Perla*-like insects of that age.

The Coleoptera also are represented in these strata by the first undoubted fossils. The group has no allies among the ancient insects. The older idea that the Staphylinidæ were possibly derived from something like the Forficulids is based upon the most superficial observations and is now generally recognized as untenable. Beetles probably arose as small insects with the habits of the Corrodentia, but with the immense advantage of complex metamorphosis, making possible a better adaptation to their environments. The resemblance between beetle larvæ and those of the Sialidæ is the only positive evidence we have as to the phylogeny of this group and a rejection of this would simply leave the group isolated. The three groups which have been considered distinct orders are now uniformly united to form one order.

In the jurassic the remaining large groups of insects make their appearance, though none allied to *Papilio* or *Apis* appear before the middle of this era.

The Neuropterous groups are very commonly separated into distinct orders, probably because of the very evident leading of Panorpids and Phryganids toward the higher orders. The Neuroptera are maintained as one order in the scheme here presented, because of the author's conviction that the change from a *Perla* to a *Sialis* has not involved any such fundamental changes in structure as marked the differentiation of the beetle, and that in becoming a *Panorpa* or a *Phryganea* there was nothing comparable to the formation of the groups of flies or wasps or moths. If, however, other views are held, the result would be simply the separation of this group into two, three, four, five, or more orders, having the relationships indicated on this diagram.

The Diptera have often been made into two groups by the separation of the fleas, and more rarely into three, and the Hymenoptera and Lepidoptera have always had the same value. The derivation of the Diptera from a Panorpid-like ancestor

has not been generally accepted as yet, but no other origin has been suggested, except that it was Neuropterous. The same is true of the Hymenoptera which have often been placed nearer to the Diptera and with none or very vague ideas as to their origin. It seems to the author that the evidence of the wing venation in each of these three orders is unimpeachable as all recognize it is in the case of the Lepidoptera.

The scheme just presented illustrating the phylogeny and primary classification of insects, while not an elective or compromise measure in any particular, does express more nearly a consensus of the opinions of recent students of the subject than any thus far presented, and illustrates the fact that the most essential differences of opinion between authors is the same as in all other attempts at classification, the differences between those who contend for few or for many groups.

Ctenothrips, new Genus.

By H. J. FRANKLIN, B. S., Massachusetts Agricultural College, Amherst, Mass.

Head about as wide as long. Eyes prominent; vertex elevated between them. Ocelli present and large in size. Antennæ eight-segmented. Prothorax strongly rounded in outline, when viewed from above or below; two long spines at each posterior angle; no long spines at the anterior angles. Wings well developed, but very narrow for length; each one of the fore pair with two longitudinal, but not prominent, veins; these veins and the costa set with prominent spines. Surface of abdomen reticulated. Lateral portions of the posterior margin of eighth abdominal segment dentate and strongly produced posteriorly. Posterior margin of the dorsal plate of the eighth segment comblike (Fig. 2). Tenth segment split above; only moderately conical in form. Ovipositor well developed.

Generic name derived from (κτείς, comb; θρυψ thrips).

This genus shows certain affinities with both *Euthrips* (of Hinds) and *Sericothrips* Haliday. The wings and antennæ

are strongly suggestive of *Sericothrips*, but the abdomen lacks the numerous small spines characteristic of that genus.

Ctenothrips bridwelli n. sp.

Female.—Length 1.75 mm. to 1.9 mm.; width of mesothorax .33 mm. to .37 mm.; greatest width of abdomen .45 mm. to .48 mm. General color very dark brown, thorax lighter.

Head a little longer than wide; equally broad in front and behind; somewhat retracted into the prothorax; sides immediately behind the eyes strongly concave; top and sides behind rough with transverse ridges. Eyes with rather unusually strong hairs between the facets; appearing to protrude strongly on account of the concavities behind

Fig. 1.—Head, prothorax, antennae and forelegs of female.

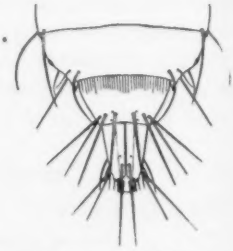


Fig. 2.—End of abdomen.

them. Cheeks, behind these concavities, rather full and rough with ridges. On the hinder border of the postocular concavity, on each side, there are three prominent spines rather closely placed. Ocelli large and well separated; ocellar bristles present, but inconspicuous. Mouth cone rather long and sharp. Antennæ about two and one quarter times as long as the head; their bases separated by the notched elevation of vertex; relative lengths of segments as follows:

Number of segment,	1	2	3	4	5	6	7	8
Spaces of micrometer covering it,	9.5	11	20.5	17.5	14	19	3	5

Basal two segments much the thickest; spines on most of the segments long and slender; sense organs rather small and inconspicuous. Segment one cylindrical, somewhat thicker at base than at apex; two strongly constricted toward the base; three and four fusiform; five similar in form to four at its base, but quite broad at its apex and rather broadly joined to six, which with style tapers gradually to the tip. Color: one and two rather dark brown; three clear yellow; four yellow, but slightly tinged with brown; five yellow at base, but gradually shading into light brown at apex; six brown; style brown, but lighter than six.

Prothorax but little more than three-fourths as long as the head; nearly one-third of its own width wider than the head; sides well rounded; angles rounded; surface smooth; two long spines at each posterior angle; no long spines at the anterior angles; besides the long spines at the angles, there are six shorter ones arranged in a transverse row near the posterior border, the two middle ones in the row being the longest; there are three short upcuvred spines at each of the anterior angles and a single spine near the anterior border on each side, about half way from the angle to the median line. Prothorax concolorous with pterothorax; much lighter than head and abdomen. Mesothorax more than one-fourth its own width broader than the prothorax; metathorax somewhat narrower than mesothorax; meso- and metathorax together slightly more than one and one-half times as long as the prothorax. Surface of mesoscutum strongly reticulate. Wings well developed; somewhat variable in length, usually reaching the anterior border of the seventh abdominal segment; very narrow and slender for length; fore wings only slightly longer than hind ones. Breadth of fore wings at middle only about one-twenty-first their

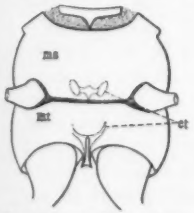


Fig. 3.—Ventral view of pterothorax; *et*, endo-thoracic invaginations; *ms*, mesosternum; *mt*, metasternum.

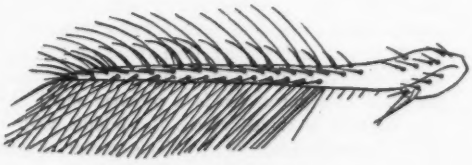


Fig. 4.—Left forewing.

length; the basal fourth of each transparent, the remainder being heavily shaded with brown, especially the middle portion. Two longitudinal, but not prominent veins extend to the tip of each fore wing; spines on the basal portion of the wing light, but on the shaded portion brown; spines on costa of good length and about twenty-five in number; on the fore vein from eighteen to twenty, placed at regular intervals for the most part, but with a considerable gap toward the base of the wing and often with irregular gaps toward the apex; on the hind vein there are from thirteen to fifteen spines also placed regularly for the most part, but usually at greater intervals toward the apex of the wing; the scale bears several spines; costal fringe of fore wings rather slight; posterior fringes moderately heavy and more or less crinkled; surface of wings thickly covered with minute spines. Legs (especially the middle and hind pairs) rather long and slender; quite strongly and evenly spinose, but otherwise unarmed except for a comb-like row of about twelve stronger spines on the

inner side of each posterior tibia. Anterior legs somewhat shorter and stouter than the others. All the femora more or less roughened by encircling ridges; all the tibiæ constricted toward their bases; tarsi long, as broad at their apices as at their bases; anterior and posterior, especially the posterior, coxæ thick and heavy. General color of legs dark brown; tibiæ generally slightly lighter than the femora; tarsi yellowish brown; the very bases of the middle femora and all of the middle trochanters light translucent yellow.

Abdomen at base considerably narrower than the pterothorax; very elongate-ovate in general outline; widest at the fifth and sixth segments; from the posterior border of the seventh segment tapering rather abruptly to the base of the tenth segment; nearly three times as long as broad; surface, when viewed by reflected light, strongly and closely reticulated, both above and below; last two segments less strongly reticulate. Abdomen very dark brown; first segment sometimes lighter; apical portion of the ninth segment and all of the tenth segment always somewhat lighter than the remainder. The sides of the eighth segment sharply dentate with rather coarse teeth on the hind border and strongly produced posteriorly; the posterior margin of the eighth dorsal segment drawn out in such a way as to form comb-like teeth. Spines along sides and around tip of abdomen mostly long, large and conspicuous; those on the ninth segment as a rule larger and heavier than those on the tenth; those at the very apical margin of the tenth small and inconspicuous. Protruding from the apex of segment ten is a peculiar small globular semitransparent organ which is tinged across the middle with brown and bears two small inconspicuous spines. This organ is probably a part of the sheath for the reception of the ovipositor when it is not in use. Attached to each side of the ventral apical margin of the tenth segment is a peculiar flap-like process. These processes are present in other species and are often found, in mounted specimens, strongly inclined toward each other, over and beyond the ventral gap in segment ten and it may be their function to assist as catches in holding the ovipositor in place. Both the globular organ and the flaps here described are present, and under the high powers of the microscope appear prominently, in all the specimens which I have.

Described from five cotypes, two of which are deposited in the collection of the United States National Museum, and the remaining three in the collection of the Massachusetts Agricultural College.

Specimens captured in Bellamy River Swamps, Dover, N. H., on flowers of *Symplocarpus foetidus* Salisb., April 11, 1904, by Mr. J. C. Bridwell, through whose kindness I received them and for whom I name the species.

A Noctuid new to the North American Fauna.

By HENRY ENGEL, Merrick Museum, New Brighton, Pa.

While examining the collection of Mr. George Krautwurm, of Pittsburgh, Pa., during the winter of 1904, I observed a Noctuid of striking appearance, and a total stranger to me.

Among other species, Mr. Krautwurm kindly loaned me this specimen, and I sent it to Prof. J. B. Smith, who remarked that it was a puzzle to him.

The specimen was next sent to Dr. H. G. Dyar, who informed me that the species was not represented in the North American collection of the U. S. Natl. Museum. He suggested that I return the specimen the following winter for comparison with the Schaus collection, which at that time was not in shape for comparison. I purchased the specimen from Mr. Krautwurm, and during the following winter sent it again to Dr. Dyar, who made the following determination, and I hereby extend my thanks to him for his kindness in giving me the references, as well as determining many other species for me.

Massala, Walker. Cat. British Museum, XXXIII, 977, 1865.
obvertens Walker.
Azeta obvertens, Walker. Cat. British Museum, XV, 1580, 1858.

Habitat.—West Indies, tropical America to Mexico; Pittsburgh, Pa., August 3, 1904. One specimen found at rest on trunk of willow tree. (Geo. Krautwurm.)

DR. F. E. BLAISDELL, 1632 Post Street, San Francisco, California, will determine the Tenebrionidæ of the United States for those persons desiring names.

MRS A. T. SLOSSON is spending some weeks at the Mountain Park Hotel, Hot Springs, North Carolina.

NAMES OF COLEOPTERA.—In the NEWS, November, 1906, p. 349. I stated, on Dr. Bergroth's authority, that *Ino* (preoccupied) should be called *Inoplectus* Smith. Dr. Bergroth now writes to say that this was a slip of the pen for *Inopeplus*.

Leptotheca Fauvel, 1904, for a genus of Ptinidæ from New Caledonia, is preoccupied by *Leptotheca* Thelohan, 1895, in Protozoa.—T. D. A. COCKERELL.

Sciagraphia decorata n. sp.

Expanse 27 mm.—General color even sordid gray with a delicate pink cast to the wings. Primaries with small black flecks on basal half of costa. Intradiscal line almost straight, scarcely discernible at costa, becoming very evident at cubitus, whence it proceeds as a distinct black line to inner margin, edged on both sides by a pink shade, more pronounced externally. Extradiscal line begins on costa a little over one-fourth in on costa, extends with a decided inward curve toward outer margin to M1, then bends at right angles and with a double inward curve ends at inner margin midway between the intradiscal line and anal angle. Internally, from angle to inner margin, this line is bordered by a deep shade of pink and externally by a very narrow border of the same color. Basal area uniform in color. Median area paler than rest of wing, with a somewhat diffuse discal spot, the pink showing rather plainly along the veins. Inner half of outer area deeply brown shaded;, the terminal line indicated by intervenular black dots. Secondaries more heavily shaded at outer margin and anal angle. A brown transverse line bordered on each side with pink is indicated on inner margin; discal spot rather faint; terminal line broken at the veins. Beneath, almost uniform sordid gray slightly shaded outwardly; discal spots and terminal line more distinct than above.

The above describes the female type: a co-type is a little worn, and while showing scarcely any pink, has the transverse markings more sharply defined at the costa, and a third line is present, indistinctly running through the median area rounding the discal spot externally.

Types—Two females, one at Rutgers College and one in Acad. Natl. Sci., Philada., from Dr. Skinner.

Habitat—Stockton, Utah, June 14th and July 1st.

Nearest to *snoviata* Pack., but quite different in the ground color, which in *decorata* is distinctly gray, not brownish, as are all the specimens of *snoviata* before me. The transverse lines are also very narrow, as compared with *snoviata,* and the angle of intradiscal line at M_1 is more acute, though this latter may be a variable feature.

I am prepared, with the assistance of Mr. Aug. Busck in the *Tineina,* to name any Lepidoptera, especially North American Phycitinæ and Mexican moths.—HARRISON G. DYAR, *U. S. National Museum, Washington, D. C.*

A new genus and two new species of Geometridae.

By JOHN A. GROSSBECK.

EUPHENOLIA n. gen.

Palpi rather short, projecting a little in front of head, ascending, long scaled; front smooth, rounded; tongue well developed; antennæ filiform ciliate below, scaled above, the scales giving the appearance of serrations; thorax and abdomen smooth scaled; hind tibia of male slender, no spurs, without hair pencil; tarsi well developed, long slender. Fore wings 12 veins, one accessory cell; R_1, R_2 and R_3 (=veins 11, 10 and 9, respectively), off R_4 (=8), R_4 shortly stalked with R_5 (=7), M_1 (=6) widely separate. Hind wings 8 veins; Sc. (=8) anastomosing with R (=7) on second quarter of cell, R very long stemmed with M_1.

Type—*Euphenolia skinnerata*, n. sp.

A genus of the Sterrhinæ differing from all others in the long, slender posterior legs, which are destitute of spurs and hair pencil.

Euphenolia skinnerata n. sp.

Expanse 13.5-14.5 mm.—Front umber brown, vertex creamy white, antennæ and palpi pale yellowish-brown; thorax and abdomen creamy yellow with a pale brown cast, more pronounced on the thorax. Wings creamy yellow; fringe concolorous. Primaries with intradiscal brown line one-fourth from base, bends suddenly out from costa, then evenly almost without curve to inner margin. A similar colored extradiscal line begins on costa one-third in from apex, bends gently out and in to M2, then again more strongly out and in to Cu2 and shortly outward to inner margin. Basal area rather thickly overlaid with brown scales. Median area with a central shade forming an indistinct brown line. No discal spot. Outer area with a broad shade of brown just exterior to extradiscal line; marginal line narrow, brown. Secondaries with two sinuous pale brown lines from costa to inner margin; the outermost area slightly brown-shaded. Beneath with ornamentation of upper side largely reproduced, the inner lines rather inconspicuous; a small discal spot on all wings.

A well marked form very unlike any Geometer known to me.

Types.—One male, Rutgers College; one female, Academy Natural Sciences, Philadelphia.

Habitat.—Carr Canyon, Huachuca Mountains, Cochise County, Arizona, in August. Collected by Dr. Henry Skinner to whom the species is respectfully dedicated.

Entomological Literature.

TRANSACTIONS OF THE AMERICAN ENTOMOLOGICAL SOCIETY: Vol. xxxii, Nos. 3 and 4 [received at Boulder, Colo., February 11, 1907; separates published earlier].

The new part of the Transactions, though not especially bulky, includes eight titles; three by Schaeffer, on Coleoptera; one by E. T. Cresson, Jr., on Diptera; one by Kellogg, on Mallophaga; two by Cameron, on wasps, and a list of the bees of New Mexico, by Cockerell.

Mr. Chas. Schaeffer treats of Scarabæidæ, Pselaphidæ, and Anthribidæ. The genera allied to *Bolboceras* are revised, with one new genus, a new species and subspecies, and some generic transfers. The result is as follows— if we use the recently published *Bradycinetulus* in place of the preoccupied term *Bradycinetus*.

Bradycinetulus Ckll.
fossatus (Hald.)
ferrugineus (Beauv.)
serratus (Lec.)
serratus peninsularis (Schaeff.)
carinatus (Schaeff.)
Bolboceras Kirby.
lazarus (Oliv.)
hornii (Riv.)
minor (Linell.)
Bolbocerosoma Schaeff.
farctum (Fab.)

There is a new *Copris* from Arizona, with a table of the species of that genus; three new *Lachnosterna* species are described; and a new genus (*Anoplocephalus*) is proposed for a new species from Arizona, evidently a fine large form, very distinct from anything else in our fauna.

In the Pselaphidæ six new species are described, from North Carolina, Texas, New Mexico and California. The new Anthribidæ include sixteen species, with two new genera. The largest is *Phoenicobiella schwarzii* (*Phoenicobius schwarzii*), found by Townsend, at Brownsville, infesting *Sabal mexicana*.

Mr. E. T. Cresson, Jr., has a very interesting account of the Ortalidæ, collected by Messrs. Viereck and Rehn, during their expedition to New Mexico in 1902, including also some Mexican material obtained by Mr. J. F. McClendon, in 1903. There is a new genus (*Hiatus*), and new species of *Antomola, Pterocalla, Acrosticta* and *Euxesta*. The paper is accompanied by a plate.

Professor Kellogg lists the bird-lice collected by Mr. Rollo Beck at the Galapagos and Revillagigedo Islands, and neighboring waters, in 1901. The list is a long one, and two new species are described—

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JUNE, 1907.

AT a recent meeting of a profoundly learned society, papers were read in relation to the historical facts of Jonah and the whale, the seat of the soul (in the liver), and others of vast importance to humanity. This has suggested to us that we are very ignorant in relation to some entomological problems never satisfactorily answered. It appears very foolish to bother with the questions of economic entomology and the transmission of disease by insects to human beings, when we know so little about the conditions of the insect world when Noah landed on Mt. Ararat. About 300,000 insects have been described and the number of existing species has been estimated as high as 10,000,000. The questions we would propound are the following, and we trust they will be answered before less important matters are considered: How many species of insects existed at the time of the Flood? How did Noah catch a pair of each species? This question involves most important matters in regard to modern entomological technic. We can understand how the phytophagous insects were nourished, but if we knew how the vast army of parasites was treated it would be of value to the students of life-histories of to-day. Unfortunately the insects were kept alive; had they been dead, Noah's practice would have shed light on up-to-date museum methods. These studies have been greatly neglected and their importance grossly underestimated, and we can only hope that the Entomological Society of America will take up the matter at its next meeting and appoint a strong committee to look into the problem.*

*Aquatic insects are not important in this connection and need not be seriously considered.

one after Dr. Ridgway, the other after Mr. Beck. The word *galapagoensis* is printed many times "*galapagœnsis*," which is quite erroneous.

Mr. P. Cameron describes numerous species of *Odynerus* and immediately allied genera from North America. Many are said to be from New Mexico, no collector's name being given. Presumably, they come from that mysterious "New Mexico" collection which contained so many evidently Mexican species, and we must regard the locality as doubtful until they are rediscovered. *O. ruficandis*, on p. 328, is a misprint for *ruficaudis*.—T. D. A. C.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Dr. W. G. Dietz, 21 N. Vine St., Hazelton, Penna., will name Microlepidoptera, particularly *Tineina*.

Dr. Edwin C. Van Dyke will leave about May first on a four months' exploring trip to the Aleutian Islands, and says, "We are to make as thorough an exploration as we can, in the time, of the entire Aleutian group of islands. We will not stop at any point on the mainland, after leaving Seattle, though we may possibly visit one or two of the Commander group. We go first to Unalaska, then strike west to Attu, and work back with the trade winds from there. We will thus not be at all in touch with the rest of the world. I go both as physician and scientist, the opportunity to thoroughly explore this group, being really too tempting for me to refuse. The party is to be known as the "Technology Expedition," and is mainly to make a thorough reconnoissance of the group. The party will be small, six, including two assistants from the Boston Technology, so we will have to distribute our energies somewhat. I will have to do some botanical work in which I will have an assistant, but I can assure you, most of my time will be put in in collecting insects. I will try and get as complete a series as I can in all orders from all of the islands. That I think is very much needed, and will enable us to get a very much better idea than we have had of the range of the various species. The insects are to be my own, but I will most likely send on a complimentary series to Cambridge, seeing that it is the Boston people who are financing it. I will, however, try and get series enough so that I can send somethings to my friends. All insects outside of Coleoptera, I will, of course, ask others to work up, a full series, types included, to be returned to the California Academy. I will do the best I can with the Lepidoptera."

One of the most important entomological papers of many years past, from the standpoint of the student of variation, of heredity, or of evolution, has recently been issued by the Carnegie Institution of Washington, as Publication No. 48. It is entitled "An Investigation of Evolution in Chrysomelid beetles of the genus Leptinotarsa," by William Lawrence Tower, Instructor in Embryology, University of Chicago, and Associate, Station for Experimental Evolution at Cold Spring Harbor, New York. Pp. X, 320. Thirty plates, some in colors, 31 text figures, 107 variation tables in the text.

A SPECIAL MEETING of the Entomological Society of America will be held in Boston about the 19th of August next, in connection with the Seventh International Congress of Zoology. Members are urged to be present and to contribute to the program of the meeting.

In order to facilitate the work of the Executive Committee in arranging a program, abstracts of proposed communications should be mailed to the Secretary, J. CHESTER BRADLEY, Secretary-Treasurer, Berkeley, Calif.

Note that after July 15th the address of the Secretary-Treasurer will be Cornell University, Ithaca, N. Y.

Doings of Societies.

Minutes of meetings of the Brooklyn Entomological Society, 55 Stuyvesant Avenue, Brooklyn, N. Y., December 7th, 1906. President Dr. Zabriskie in the chair and fifteen members present. Messrs. Robert P. Dow, of Brooklyn, and H. H. Brehme, of Newark, N. J., were elected members.

Mr. Dickerson spoke on "Causes of Periodical Increase and Decrease of Insects." Mentioning the enormous increase, possible under favorable conditions in some species, such as the San José scale and housefly, his remarks related chiefly to the occurrence and condition during a number of years of the following insects: rose-chafer, chinch-bug, cottony maple and cushion scales, army and canker worms and brown-tail and gipsy moths. As factors causing a decrease he quoted: climatic conditions, insect epidemics, the interference by man, predacious insects and animals, fungus growths and parasites.

Mr. Doll stated that from a lot of cocoons of *Agapema galbina*, collected at Brownsville, Texas, in the summer of 1903, moths had emerged during that year and during every succeeding year until the present time, when several pupæ still

remain alive, this showing a pupal period of over four years, which is unusual in the saturniid moths.

JANUARY 17, 1907.—The President, Dr. Zabriskie, in the chair, and thirteen members present.

Mr. Edward Moore, of Brooklyn, was elected a member. The following officers were elected: President, Dr. J. L. Zabriskie; Vice-President, E. L. Graef, Corresponding Secretary, A. C. Weeks; Recording Secretary, George P. Engelhardt Treasurer, C. H. Roberts, Curator, Geo. Franck, Librarian, J. J. Levinson.

Prof. J. B. Smith was elected as delegate to the council of the New York Academy of Sciences.

FEBRUARY 7, 1907.—The President Dr. Zabriskie in the chair, and seventeen members and twelve visitors present.

Mr. Engelhardt addressed the Society on "Experiences in Collecting Along the St. Lawrence and Saguenay Rivers," illustrated with lantern slides and three boxes of various insects; the subject relating to a vacation trip made during the past summer to those regions.

In his remarks, he called attention to Niagara Glen on the Canadian side of the Niagara River gorge, a place which, though sadly neglected by travellers, is exceedingly beautiful and affords a good opportunity for collecting, as the vegetation is exceptionally rich. He further spoke of his visits to Toronto, the Thousand Islands, Montreal, Ottawa, Quebec, the Saguenay River and Tadousac, a small village at the junction of the Saguenay and St. Lawrence, where a two weeks' stop had been made. He described the topography and the pursuits and primitive life of the French inhabitants of that region. Insects were fairly abundant and especially interesting, as showing a faunal similarity with the sub-alpine region of the White Mountains, N. H. The following species were among those exhibited: Lepidoptera—*Argynnis chariclea, Grapta gracilis, Lycaena couperii, Hyphoraia parthenos, Notodonta simplaria, Habrosyne rectangula, Catocala briseis, Albuna pyramidalis, Sthenopis quadriguttatus.* Coleoptera—*Cincindela tranquebarica* var. *obliquata, C. longilabris, Dytiscus harrisii, Dichelonycha canadensis, subvittata, albicollis, Serica tristis, Xylotrechus*

quadrimaculatus, Saperda imitans. Among other orders Hymenoptera and Odonata were well represented.

Returning East, Mr. Engelhardt visited the White Mountains in N. H., where, on top of Mount Washington, he found aquatic insects very abundant in numerous small pools.

GEO. P. ENGELHARDT, *Rec. Secretary.*

The 22nd regular quarterly meeting of the Pacific Coast Entomological Society was held on November 25th, 1906, at the residence of Miss Julia D. E. Wright in Palo Alto. President Fuchs in the chair.

Prof. Vernon L. Kellogg gave a talk on the life history of the Blepharoceridæ.

Mr. J. C. Bradley gave a talk on the Entomological Society of America, urging the entomologists of the Pacific Coast to join the society.

Mr. Coolidge spoke on the distribution of *Colias alexandra* and *edwardsii,* the former being found in Eastern Oregon, the latter in Eastern Cascade Mountains, both occurring in the Coeur d'Alene Mountains.

Dr. Van Dyke exhibited a new *Hetaerius* from California. He made a few remarks upon the species of *Necrophorus* found in the vicinity of San Francisco.. He spoke about the two common black ones: *guttula* and *pustulatus* var. *nigritus;* also of three maculate forms, *guttula* var. *hecate, vespilloides* and *marginata,* which he had found here. *H. pustulatus* var. *melsheimeri* was credited to the State but he had never seen any specimens from it and doubted whether it would be found west of the Sierras. The various species of *Hetaerius* were spoken of, the fact that though messmates with ants, very little was known about their true habits, a field of investigation which was in great need of being exploited. Their distribution was discussed and the opinion ventured that our Coast belt would no doubt yield many new species of the same as well as other small and markedly specialized species, when it was thoroughly worked over. The main reason given for this belief was that our coast belt was the largest belt of territory in this country that had gained many species from the North, that had been little

affected by the ice of the ice age. This in most other parts of the Northern part of our country had almost entirely wiped out of existence, the more lowly and the more highly specialized insects.

The 23rd regular quarterly meeting of the Pacific Coast Entomological Society was held on February 23rd, 1907, at the residence of Dr. F. E. Blaisdell, 1632 Post Street. President Fuchs in the chair.

Mr. J. C Bradley was elected to membership.

Mr. F. X. Williams gave an interesting account of his work on the Galapagos Islands (Expedition of the Cali. Acad. Sci.). He stated that five species of butterflies were observed there, *Pyrameis huntera* common, *Agraulis vanillae* var.; Sphingidæ 5 species; Noctuids and Micros were well represented; Diptera rare, especially found on cactus; mosquitoes were abundant, and apparently where there was no water. They probably breed in the orchids which are abundant in the green belt. Chiggoes common and attacked the feet; Orthoptera plentiful, 3 genera; cockroaches common; Hemiptera few, under stones and bark—some observed feeding on caterpillars; Coleoptera, 150 species: one nocturnal species of *Cincindela; Calosoma* plentiful; Dytiscidæ, 5 species; Gyrinidæ, 1 species, Hydrophilidæ, 1 species; few Staphylinids were found on rotting catcus and carrion; Coccinellidæ, 3 species; Dermestidæ were common; Histeridæ not common; Elateridæ, 5 species; Buprestidæ, one small species; Cleridæ, 1 species; several Ptinides; Scarabæidæ, 2 species—one a *Trox;* Cerambycidæ, 10 species; Chrysomelidae, 2 small species; Tenebrionidae were common: Rhynchophora numerous. He also stated that 400 to 500 feet elevation was the best altitude for collecting.. Turning over stones and logs yielded the best results. Beating was of but little success, collecting at light gave fair results, especially at the beach. His experience with black steel pins was very discouraging as they oxidize rapidly and soon become unsightly. Brass pins were the best.. Capsules were bad on account of

the dampness. Coleoptera were abundant in the cereals—especially on the vessel.

Dr. Van Dyke explained the object of the expedition—that it was to obtain all of the species possible before the natural conditions become changed by settlement of the islands; cattle, dogs and pigs have already been introduced and fire may start and destroy the fauna.

Darwin did the first collecting here and was followed by others. The present expedition was the most successful. Only 30 to 40 species were heretofore known, and Mr. Williams took over 150 species and in large series. The collections are of value to determine the age of the islands. It has been thought that the fauna had been carried there by wind, birds and currents and that the Islands were of volcanic origin. The Islands are probably the result of subsidence and the flora and fauna reduced thereby in the opinion of the doctor.

Mr. F. W. Nunenmacher gave an interesting account of his collecting in the vicinity of Nogales, Arizona. He is especially interested in the Cicindelidæ, and took 17 genera, 49 species; and 2,000 specimens. The following is his list of species: *Megilla maculata, M. vittigera, Hippodamia convergens, Coccinella pauciscana, C. sanguinea, C. abdominalis, Harmonia cyanoptera, Psyllobora* n. sp., *Chilocorus bivulneratus, C. cacti Exochomus pilatti, Ex. bipustulatus, Brachycantha,* 2 species; *Hyperaspis,* a species close to *4-vittatus; H. lateralis, H. 8-notata, H. pinguis, H. medialis, H. globula, H. pleuralis, H. fimbriolata, H. montanica,* and 4 species undetermined; *Hyperaspidius,* 2 species; *Cephaloscymnus occidentalis, Smilia marginata, Scymnillus aterrimus, Scymnus,* 14 species; *Thalassa montezuma, Epilachna corrupta,* Novius n. sp.

Mr. J. C. Bradley discussed his studies on the Evaniidæ.

Mr. L. E. Ricksecker exhibited *Orgyia* in all stages of development.

Miss Julia D. E. Wright reported the progress of the Santa Clara Valley Entomological Club.

Mr. F. W. Nunenmacher exhibited a fine series of Coccinellidæ from Nogales, Ariz.

F. E. Blaisdell, M. D., *Secretary.*

On Friday, April 12, 1907, at the home of Erval Newcomer, Forrest Court, Palo Alto, was held the regular meeting of the Santa Clara Valley Entomological Club. In the absence of the president and vice-president, the meeting was called to order by C. F. Palmer, twenty members being present.

The club was much honored with the presence of D. L. Van Dine, experiment station entomologist for the Hawaiian Islands. He mentioned a number of entomological problems.

One of the most interesting of these is in regard to the honey produced on the islands. There is some substance there that the bees obtain that gives a very high percentage of glucose in the honey. The government pure-food law allows only a certain percentage of glucose, as that substance is one of the chief adulterants that is commonly used. While the island honey is pure and just as wholesome as that produced in any part of the world, this comparatively large amount of glucose shows badly in the analysis. The honey shipment of the islands will amount to over 800 tons this year, and the producers are greatly interested in having the law so modified in their case as to allow the honey to come under the pure-food products.

Another problem that the entomologist has to contend with is a small fly that in some parts of the islands is almost driving out the cattle industry. This fly has been abundant for a number of years, but it has only been of late that it has so seriously threatened the interests of the cattle men.

Mr. Van Dine brought greetings from the Hawaiian Entomological Society to the local club, which he hopes to visit again on his return to the islands in about two months. Another guest of the club was Mr. Edward M. Ehrhorn, the state horticulturist, who spoke a few words on the work of the quarantine department of San Francisco. He also called attention to the parasite of the red scale recently imported from China.

Harvey Hall, instructor in botany at the University of California, gave a talk on the "Life Zones of California." Nearly every one can distinguish generally the life zones—as the deserts, foothills, the timber and perpetual snowlines—but about fifteen years ago Dr. C. Hart Merriam was the first to map out the life zones accurately. Before this they were

known as belts. The life zones are divided into the following:

The sub-tropical comprising a small portion of the Colorado river; the Lower Sonoran, the desert area, characterized, by the creosote bush, tree yuccas, cactii and sand bur; the Upper Sonoran, or chaparral zone characterized by ceonothus, manzanita and different scrub oaks; transition zone or yellow pine belt. In this zone there are two centres of origin, the northern and southern. The mixing of these two origins determined the name of this zone. Above this is the timber belt. Mr. Hall considers this as one zone, but Dr. Merriman subdivides it into the Hudsonian and Canadian zones. Alpine hemlock, white bark pine, little sugar pine are found here. The Alpine zone characterized by Alpine sorrel.

The zones can be mapped out, but the reason and cause of the zones have yet to be determined.

Mr. J. S. Hunter, who has charge of the mosquito extermination work at San Mateo and Burlingame, then gave an outline of the work that has been done. He dwelt at length on the importance of the mosquito problem. The work of exteminating the mosquito was first undertaken about four or five years ago at San Rafael, under the direction of Mr. Ashman. About three years ago the Burlingame Country Club asked for help in the mosquito problem, as they were exceedingly troublesome. The two species that are most troublesome are the salt water forms, the *Culex lattivittatus* and *Culex squamiger*. These are more difficult to control than the fresh water forms on account of the great extent of the marshy land and direction of the winds from South San Francisco. In conclusion Mr. Hunter said the work is still in continuance and it is hoped that this region in time may be fully freed of these insects.

Mr. Ehrhorn and Mr. Van Dine were unanimously elected members of the club.

Adjournment and refreshments followed.

JULIA D. E. WRIGHT, *Secretary*.

The regular meeting of the Santa Clara Valley Entomological Club was held last Friday night, March 8th, at the Delta Upsilon House, Stanford University.

In the absence of the president, R. W. Doane, the vice-president, Earl Morris, the county entomologist, presided. Twenty-three members were present and three visitors.

J. Chester Bradley, instructor in entomology at the University of California, was the speaker for the evening. The general subject was the wing venation of the parasitic hymenoptera.

JULIA D. E. WRIGHT, *Secretary.*

The monthly meeting of the Newark Entomological Society was held in Turn Hall, Newark, on February 10, 1907, the President in the chair, and twenty members present. Mr. John Kuenzler, of Paterson, a visitor. Mr. Emile Gerstenborn, of New York, was proposed for membership and unanimously elected. Mr. Brehme presented "Notes on certain Rhopalocera species observed during the season of 1906." He spoke of the scarcity of *Chrysophanus hypophlaeus, Lycaena pseudargiolus* and its varieties, and *Thecla damon;* this latter a usually common insect at Paterson. *Thecla augustus* and *edwardsii,* he found very common locally: the former had always been rare with him and the latter he had never taken before. In 1906 he took over two hundred specimens, July 4, at Newark. He reported the capture of *T. m-album* on the Orange Mountains, April 28th. *Ceratomia catalpae,* Mr. Brehme stated, had made its way north as far as Irvington and Eagle Rock. Mr. Dickerson remarked that he had found it at Morristown and Hackettstown during the past season. Mr. Brehme also presented a paper on "How to prepare Lepidoptera for the Cabinet in Short Order."

Mr. Wormsbacher approved of the method as explained by Mr. Brehme, having himself practised it for some time;; but he warned against the use of pine boards, relating an instance where all his specimens were glued fast to the boards owing to the exudation of the resin. Mr. Wasmuth exhibited a box of Lepidoptera, among which were *Catocala electilis, C. insolabilis* with a large white spot on the primaries, *C. unijuga* with yellow underwings, *Smerinthus saliceti* from Arizona and a rare indetermined species of *Gloveria* from Texas.

Mr. Gerstenborn showed a series of about sixty hybrids procured by mating a male *Paonias ocellatus* of Europe with a female *Paonias excaecatus*. Enlarged photographs of the hybrid larvæ were shown which in markings inclined toward the European species.

Mr. Brehme exhibited his collection of *Theclas*, representing forty-seven species exclusive of varieties.

Mr. Engleman showed a box of *Haploa* largely illustrating local forms, and Mr. Buchholz showed a fine series of *Euxoa ochrogaster* illustrating the exceedingly wide range of variation displayed by the species.

JOHN A. GROSSBECK, *Sec'y*.

The monthly meeting of the Newark Entomological Society was held in Turn Hall, Newark, on March 10th, the President in the chair, and fourteen members present. Messrs. George Domidion, of Jersey City, and J. Mattes, of New York, present as visitors.

Mr. Brehme showed his collection of *Lycaena*, consisting of forty-eight species and varieties. Mr. Mattes exhibited over two hundred beautifully blown larvæ of Lepidoptera which retained their natural colors to a remarkable degree. Mr. Engelhardt gave an account of his trip to Canada and spoke of successfully bringing *Lycaena couperii* to maturity from larvæ which he found on wild pea at Saginaw River in the Province of Quebec.

OTTO BUCHHOLZ, *Sec'y*, pro tem.

A meeting of the Entomological Section of The Academy of Natural Sciences of Philadelphia was held December 27, 1906. Mr. Philip Laurent, Director, presiding. Thirteen persons were present. The annual reports of the officers were read.

Mr. E. Daecke exhibited a *Bombus*, which on examination by H. J. Franklin proved to be B. *scutellaris* ♂. It was taken at Lucaston, New Jersey, September 17, 1903. This is the most northern point it has been found, and it is new to New Jersey.

Mr. Laurent said *Tenodera sinensis* was holding its own in Germantown, as he had found many eggs masses this season.

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teen persons were present. The annual reports were read. The Society voted to donate its publications to the California Academy of Sciences, so far as they could be supplied. The following were elected officers to serve for the ensuing year: President, Philip P. Calvert; Vice-President, H. W. Wenzel; Treasurer, E. T. Cresson; Recording Secretary, Henry Skinner; Corresponding Secretary, J. H. Ridings; Curator, Henry Skinner. Publication Committee—E. T. Cresson, C. F. Seiss, B. H. Smith.

HENRY SKINNER, *Secretary.*

A meeting of the American Entomological Society was held February 28, 1907. Dr. Philip P. Calvert, President, in the chair. Fourteen members were present. An invitation was read asking the Society to appoint delegates to the Seventh International Zoological Congress, to be held in Boston. The President was authorized to appoint one or more delegates.

Mr. Wenzel exhibited specimens of *Cartodere costulata* and *Adistemia watsoni,* taken in boxes of mouldy and discarded entomological specimens in the entomological rooms of the Academy of Natural Sciences of Philadelphia. He gave the distribution of the species in accordance with Mr. Fall's paper on the Latridiidæ.

Dr. Skinner exhibited a series of *Megathymus neumoegeni* showing great variation.

Mr. Rehn said we must recognize two kinds of variation, individual and geographical, and spoke of these characters as exhibited in the Orthoptera.

Dr. Calvert verbally reviewed Tower's work on *Leptinotarsa.*

Mr. Haimbach exhibited a slide showing the neuration of *Crambus caliginosellus.* Mr. Rehn called attention to the work by B. von Wattenwyl and Redtenbacher on the Phasmidæ. The senior author is eighty-three years old, and says that this is his last work. About seventy per cent. of the species listed are new. The general scope of the work and the new classification were mentioned.

Dr. Calvert exhibited specimens of the Australian cockroach, *Periplaneta australasiae,* taken in the Biological Hall, University

Dr. Skinner exhibited specimens of *Hemileuca electra* Wright.

The following were elected officers to serve for the coming year: Director, Philip Laurent; Vice-Director, H. W. Wenzel; Treasurer, E. T. Cresson; Conservator, Henry Skinner; Secretary, J. H. Ridings; Recorder, Henry Skinner; Publication Committee, J. H. Ridings, E. T. Cresson.

HENRY SKINNER, *Recorder.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held January 24, 1907. In the absence of the Director, Dr. P. P. Calvert was called on to preside. Seven persons were present.

Dr. Skinner exhibited chrysalids of *Anthocharis olympia*, presented by Prof. Charles A. Shull.

Mr. Haimbach exhibited specimens of *Crambus daeckellus* and *placidellus* and *Haematopsis grataria* var. *annettearia*, and presented cotypes of the two latter. Mr. C. R. Boerner said Dr. Chittenden had revised the genus *Sphenophorus* and had described a species taken at Sea Isle City, New Jersey, by the speaker, under the name *marinus*. He also mentioned having taken sixteen specimens of *Stenolophus alternans* Lec., at Neshaminy Falls, Pa., on May 13th. He had previously found single specimens at South Camden, New Jersey, and East Park, Philadelphia. Dr. Skinner exhibited specimens showing complete intergradation between *Thecla calanus* and *edwardsi*. Dr. Calvert exhibited *Argia moesta* Hagen, found at Grand Canyon; Nuevo Laredo and Lake Chapala, Mexico, etc., and described the differences in both sexes in the specimens from these various localities. These differences were illustrated by averages. The question of the specific identity or difference in the forms was raised.

HENRY SKINNER, *Recorder.*

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of Pennsylvania, Philadelphia, in the present winter, and stated that previously this species had not been noted there; the greenhouses connected with the building afforded a likely means of introduction. He also stated that Mr. Haimbach's capture of *Argia translata* mentioned in the NEWS for January, 1907, p. 32, should be corrected as being the first record for *Eastern* Pennsylvania, since Mr. Williamson had reminded him that Mr. Graf had recorded this species from *Western* Pennsylvania in the NEWS for 1902, p. 113. Mr. Rehn recorded having found *Periplaneta truncata* in numbers at Jacksonville, Florida.

HENRY SKINNER, *Secretary.*

A meeting of the American Entomological Society was held April 24, 1907. In the absence of the President and Vice-President, Dr. D. M. Castle was called on to preside. Fifteen persons were present.

Mr. Rehn exhibited specimens of a katydid of the genus *Scaphura* which bear a striking resemblance to wasps of the genus *Pepsis.*

Mr. Viereck said Mr. Daecke had brought in a bee of an *Andrena* group which may be the male of an undescribed species. The characters of the genus were mentioned, particularly the elongated head. It was found by Mr. Daecke feeding on an ericaceous plant at Iona, New Jersey, on April 2.

Mr. Laurent said insect life was scarce in Florida during January, February and March, the weather being very dry.

Mr. Rehn made some remarks on the Orthoptera collected in Florida by Mr. Hebard and himself in August, 1905. The more interesting species were exhibited, and the amount of geographic variation of certain of the species in the Southeastern States was discussed. Several of the species of which series were collected were previously known only from unique types.

Dr. Skinner exhibited specimens of *Chrysophanus arethusa* Wolley-Dod.

Mr. Daecke exhibited some Diptera taken by Mr. Laurent in Florida, and called particular attention to *Chrysops vittatus*, taken in March, which does not appear here until July.

HENRY SKINNER, *Secretary.*